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Tourism expansion and economic development: The case of Taiwan

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Abstract

This study examines the causal relationship between tourism expansion and economic development in Taiwan. A Granger causality test is performed following the cointegration approach to reveal the direction of causality between economic growth and tourism expansion. Test results indicate a long-run equilibrium relationship and further a bi-directional causality between the two factors. In other words, in Taiwan, tourism and economic development reinforce each other. A discussion follows and managerial implications are identified based on the empirical findings.

Keywords: Tourism expansion; Economic development; Granger causality; Cointegration; Taiwan

1. Introduction

Despite the poor global economic performance and the terrorist attacks on September 11, 2001 in the US, the number of international tourists traveling worldwide reached 715 million in 2002, an increase of 21 million from 2001 for an annual growth of 3.1 percent (World Tourism Organization, 2002). Global tourism receipts were 475.8 billion in US dollars (US$) for 2000 and 462 billion US$ for 2001. Tourist spending, as an alternative form of exports, can contribute to the balance of payments through foreign exchange earnings and proceeds generated from tourism expansion and can represent a significant income source for a national economy (Balaguer & Cantavella–Jorda, 2002). Foreign exchange earnings from tourism can also be used to import capital goods to produce goods and services, which in turn leads to economic growth (McKinnon, 1964). Other economic benefits derived from tourism activity include tax revenues, employments and additional sources of income (Archer, 1995; Belisle & Hoy, 1980; Davis, Allen, & Consenza, 1988; Durbarry, 2002; Khan, Seng, & Cheong, 1990; Uysal & Gitelson, 1994; West, 1993). It is generally assumed that tourism expansion should have a positive contribution to economic growth.

Taiwan has been recognized as an export-oriented economy (Ghartey, 1993; Jin, 1995). However, the tourism industry may be another major contributing factor toward Taiwan's economic growth. The 2002 annual statistics of Tourism (Tourism Bureau, 2003, p. 24) reported that Taiwan's tourism receipts accounted for 4.2 percent of the gross domestic product (GDP) in 1996. This figure exceeded the contribution of the agricultural sector to GDP, thereby making tourism one of the major industries in Taiwan.

The Taiwanese government has lately noticed a crucial role of tourism expansion in economic development and is eager to promote tourism internationally. In 2002, the Doubling Tourist Arrivals Plan (DTAP) was introduced as part of the National Development Plan named "Challenge 2008", which was designed to reinforce Taiwan's overall economy. The goal of the DTAP is to double the number of foreign tourists

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arriving in Taiwan in order to stimulate the overall production value of the domestic economy and enliven the job market.[1] To ensure the successful implementation of the DTAP, the Tourism Development and Promotion Committee (TDPC) was upgraded and the Premier of Taiwan designated as its convener.

Although the tourism industry has grown significantly in Taiwan, tourism researchers have not paid much attention to the empirical assessment of contributions of the tourism sector to Taiwan's economy. This study aims to answer the following two questions. First, is there a long-run equilibrium relationship between tourism expansion and economic growth in Taiwan? Second, if a stable long-run relationship exists, what is the direction of a causal relationship between these two variables? In other words, is tourism expansion an "engine" of Taiwan's economic development or the other way around?

The remainder of this paper is organized as follows: Section 2 reviews the relationship between economic development and tourism expansion; Section 3 describes data and analyses used; Section 4 focuses on specification of econometric models; Section 5 discusses the results of hypotheses and presents managerial implications; finally, the article concludes with a summary of the main points and suggestions for future research.

2. Economic development and tourism expansion

Theoretical models that consider a causal relationship between non-traded goods, such as Tourism, and economic growth are recent phenomenon.[2] Some researchers have proposed a Tourism-led growth hypothesis that assumes tourism to be a major factor of overall long-run economic growth (Balaguer & Cantavella-Jorda, 2002; Dritsakis, 2004). Tourism-led growth may take place when tourism demonstrates a stimulating influence across the overall economy in the form of spillovers and other externalities (Marin, 1992).

To date, articles that have analyzed the causal relationship between economic growth and tourism activity are limited and results have been mixed.

For example, using Spanish data from 1975 to 1997, Balaguer and Cantavella-Jorda (2002) discovered a stable long-run relationship between tourism and economic growth. After conducting a standard Granger (1969) causality test, the authors further found that tourism affected Spain's economic growth in one direction, thereby supporting the tourism-led growth hypothesis. Although the authors mentioned that the tourism-led growth hypothesis is not specific to developing countries, it was not clearly stated that the theory could be applicable to all countries.

Dritsakis (2004) examined the impact of tourism on the long-run economic growth of Greece using a similar method. One cointegrated vector was found among GDP, real effective exchange rate and international tourism earnings from 1960 to 2000. Granger causality tests based on Error Correction Models indicated that there is a strong Granger causal relationship between international tourism earnings and economic growth, a strong causal relationship between real exchange rate and economic growth and simply causal relationships between economic growth and international tourism earnings and between real exchange rate and international tourism earnings. In sum, his study supports both tourism-led economic development and economic-driven tourism growth.

However, Oh (2005) disagreed with the tourism-led growth theory. After Balaguer and Cantavella-Jorda's (2002) work, Oh (2005) counter-argued that the existence of the tourism-led growth hypothesis in Spain may be attributed to the fact that Spain is one of the world's top recipients of international tourist revenues. Tourism earnings in Spain comprise approximately 5.9 percent of its GDP (World Tourism Organization, 2000). The author used South Korea as a destination country for comparison. Although South Korea and Spain are both developing countries, the tourism industry in South Korea is not as strong as Spain. For example, value-added revenue derived from tourism-related activities accounts for 3.5 percent of South Korea's GDP (Bank of Korea, 2002). In his study, the cointegration analysis indicated no long-run link between tourism receipts and economic growth in South Korea over the period from 1975 to 2001. He further found an economic-driven tourism growth instead of a tourism-led economic growth, thereby implying that in South Korea, economic growth led tourism expansion rather than tourism expansion causing economic growth.

Our a priori expectation was that because Taiwan and South Korea have a similar economic structure such as being export-oriented economies (Sengupta & Espana, 1994) and that traditionally neither country has considered tourism as a leading industry, empirical results of this study would be similar to Oh's (2005) results. The following hypotheses are considered in order to verify the existence of the previously mentioned relationship in the case of Taiwan.

[1] For the detailed contents of the Double Tourist Arrivals Plan, see the website: http://www.cepd.gov.tw/2008/challenge2008.pdf.

[2] Traditionally, economic scholars have focused on a relationship between traded goods and economic development (Ahmed & Kwan, 1991; Jin, 1995; Kwan & Cotsomotis, 1991; Thornton, 1997; Xu, 1996). Empirical studies have reported the mixed results regarding a causal relationship between exports growth and economic expansion. For example, Shan and Sun (1998) showed a reciprocal relationship between international trade (exports growth) and economic development in China, whereas Marin (1992) demonstrated a unidirectional influence of exports growth on economic expansion in industrialized and developed countries such as Japan, UK, US, and Germany.

Hypothesis 1. There is a long-run equilibrium relationship between tourism expansion and economic growth in Taiwan.

Hypothesis 2a. Tourism expansion leads to economic growth (One-way causality: the tourism-led economic growth).

Hypothesis 2b. Economic growth leads to tourism expansion (One-way causality: the economic-led tourism expansion).

Hypothesis 2c. Tourism expansion and economic growth cause each other (Reciprocal relationship between the two variables).

3. Data and econometric analyses

3.1. Data

Economists have used data on GDP to measure the value of economic development (Bodie, Alex, & Alan, 2001). The GDP information, obtained from the financial database of the Taiwan Economic Journal (TEJ), has been reported on a quarterly and yearly basis. The total tourist arrivals were utilized as a proxy of tourism expansion (Wang & Godbey, 1994). Although tourism receipts have been another commonly used proxy of tourism activity, according to the Taiwan Tourism Bureau, the data were available only on a yearly basis and figures from 1956 to 1978 were not exact. Because of limited availability and unreliability of the data, tourism receipts were excluded.

The time-series data of total tourist arrivals (TOUR) were taken from various issues of the annual report on tourism. The monthly series of TOUR were available from January 1971 to July 2003. Because GDP data were quarterly based, the quarterly TOUR was calculated using the monthly TOUR. To match the time period with TOUR, the quarterly GDP was chosen from the first quarter of 1971 to the second quarter of 2003. The annual series of TOUR were available from 1956 to 2002. For the same reason, the annual GDP data were selected beginning from 1956 to 2002. Then, TOUR and GDP data were transformed by the use of natural logarithms (LTOUR and LGDP) to ease interpretation of coefficients. Coefficients in the log function indicate a percentage change in a dependent variable given a percentage change in an independent variable. The time trends of seasonally unadjusted data of LGDP and LTOUR are plotted in Fig. 1. Fig. 1 illustrates no

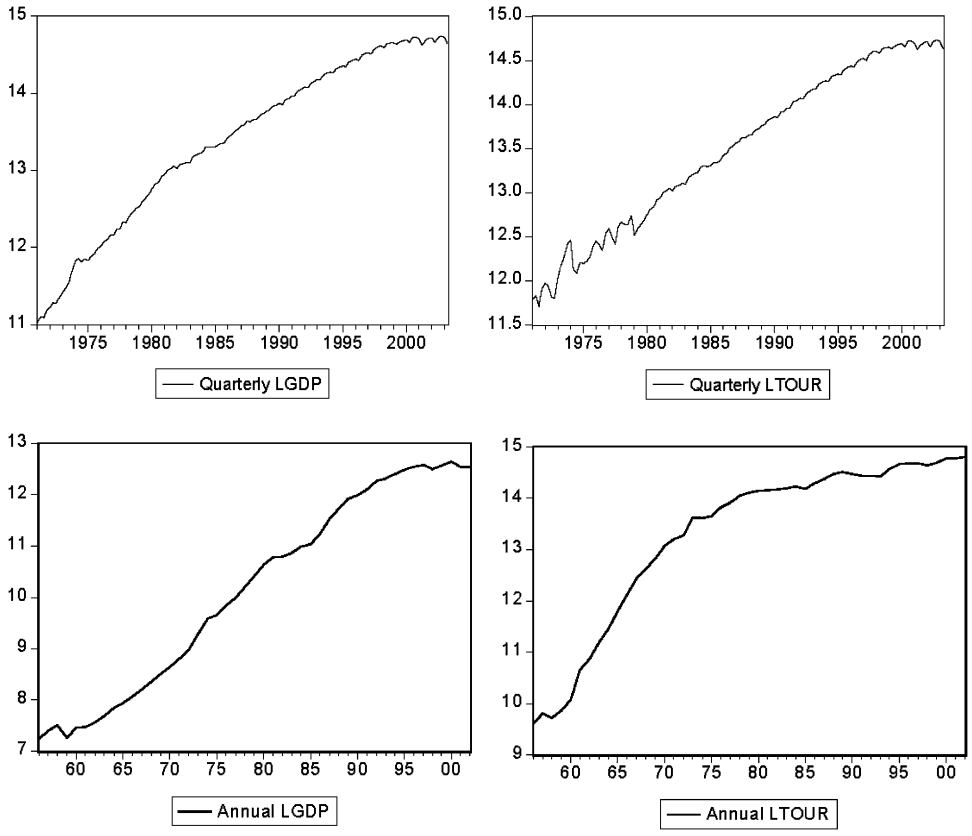

Fig. 1. The time trend of LGDP and LTOUR.

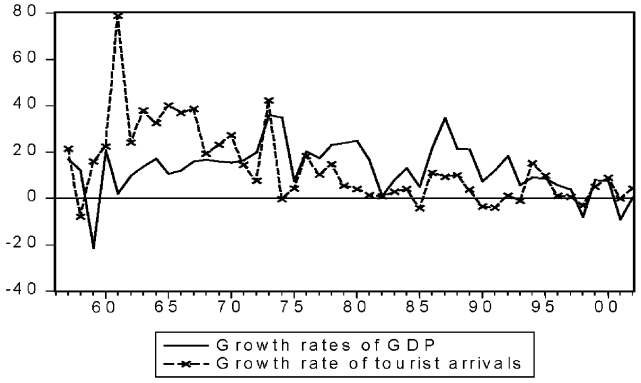

Fig. 2. The annual growth rates of GDP and tourist arrivals.

seasonal pattern or structural change in LGDP and LTOUR.[3]

The empirical examination of the financial or macroeconomic data based on various time horizons can provide different results because information about a certain period is spread over many previous time periods and not all information about the future becomes publicly known over a short period of time (Fama & French, 1987; Fama, 1990; Timmermann, 1994). Therefore, quarterly and yearly data using different time periods were chosen to ensure consistent empirical evidences regarding a relationship between tourism expansion and economic growth in Taiwan

The time trend in Fig. 2 shows that the annual growth rates of GDP and TOUR have experienced similar patterns over the suggested period although growth rates of TOUR were more volatile than GDP (see Table 1). Specifically, the average quarterly growth rate of GDP was 2.90% with a standard deviation (SD) of 3.61% whereas TOUR was 2.46% with a SD value of 6.76%. The average yearly growth rate of GDP was $12.78\% \pm 10.87\%$ (SD) whereas TOUR was $13.03\% \pm 16.55\%$ (SD).

3.2. Model specification and results[4]

3.2.1. Unit root and cointegration tests[5]

When the variables of interest are non-stationary or exhibit a unit root, the procedures of conventional econometric technique may not be appropriate (Eagle & Granger, 1987; Enders, 1995). Granger and Newbold (1974) pointed out that in the presence of non-stationary variables, an OLS regression might become a spurious regression, thereby leading to biased and meaningless results. It is important to test stationarity of time-series data to set up an appropriate methodology in the formation of econometric models (Eagle & Granger, 1987).

Table 1
Descriptive statistics of growth rates of GDP and tourist arrivals (TOUR)

Data frequency	Quarterly (1971:I–2003:II)		Annual (1956–2002)	
Variable (Growth rates)	GDP (%)	TOUR (%)	GDP (%)	TOUR (%)
Mean	2.90	2.46	12.78	13.03
Maximum	16.41	26.91	35.75	78.56
Minimum	−8.22	−29.14	−21.49	−7.99
Standard deviation	3.61	6.76	10.87	16.55

As shown in Fig. 1, in growing economies such as Taiwan, economic time-series data are likely to be non-stationary. Therefore, prior to testing a long-run equilibrium relationship between tourism expansion and economic growth, the Augmented Dickey–Fuller (Dickey & Fuller, 1981) and Phillips–Perron (Phillips & Perron, 1988) tests were carried to examine the presence of a unit root for all study variables. Results of both ADF and PP tests for stationarity are reported in Table 2. Judged by MacKinnon's (1991) critical values, the null hypothesis of one unit root against the alternative of stationarity cannot be rejected in levels of variables, but is rejected in their first differences. In other words, time-series data of LGDP and LTOUR are integrated of the same order 1, $I(1)$. Therefore, we proceeded with a long-run equilibrium analysis using the cointegration technique.

According to Engle and Granger (1987), the two non-stationary variables that are integrated in the same order are cointegrated if one or more linear combinations that exist between them are stationary. If the two variables are cointegrated, there is a long-run relationship that prevents them from drifting away from each other. In other words, in this study, if LGDP and LTOUR are cointegrated, there is a force of equilibrium that keeps LGDP and LTOUR together in the long run.

We applied the procedure developed by Johansen (1988, 1991) and Johansen and Juselius (1990) to conduct the Vector Autoregression (VAR)-based cointegration test.[6] The Johansen procedure uses two

[3]To further detect a seasonal pattern in quarterly LGDP and LTOUR, we estimated the regression equation: $y_t = c_0 + \sum_{i=1}^{3} c_i D_i + \varepsilon_t$, where y_t is the quarterly series of LGDP or LTOUR, ε_t is white noise, and D_i is a quarterly seasonal dummy variable, which equals 1 in quarter i and 0 otherwise (Enders, 1995; Enders, Sandler, & Parise, 1992). All estimated coefficients c_i ($i = 1$, 2 and 3) were statistically different from zero, indicating no seasonality in quarterly LGDP and LTOUR.

[4]EViews 4.0 is used as a statistical software package for all tests carried in this study.

[5]As one anonymous referee suggested, we omitted the description of unit root and cointegration tests because both tests are well known.

[6]Cheung and Ng (1998) noted that the Johansen procedure is more efficient than the two-step approach of Engle–Granger (1987). Cheung and Lai (1993) and Gonzalo (1994) reported that the Johansen procedure has good large- and finite-sample properties.

Table 2
Unit root tests

Data frequency	Quarterly (1971:I–2003:II)		Annual (1956–2002)	
Variable (Level)	LGDP	LTOUR	LGDP	LTOUR
ADF	−0.15 (4)	−1.86 (3)	−1.04 (2)	−1.78 (2)
PP	−0.57 (4)	−2.39 (4)	−1.04 (3)	−1.76 (3)
Variable (First difference)	ΔLGDP	ΔLTOUR	ΔLGDP	ΔLTOUR
ADF	−10.98* (4)	−6.40* (3)	−2.91* (2)	−4.96* (2)
PP	−10.98* (4)	−6.28* (4)	−4.87* (3)	−4.35* (3)

Note:Δ denotes the first difference of variable under consideration. The ADF and PP test equations include an intercept but no time trend because the inclusion of a time trend does not generate significantly different results. The optimal lags selected for the ADF test and the truncation lag for the PP test based on the Akaike information criterion (AIC, Judge, Griffiths, Hill, Lutkepohl, & Lee, 1985) and the Schwartz Bayesian criterion (SBC, Schwarz, 1978) are in parentheses. MacKinnon (1991) critical value for rejection of the null hypothesis of a unit root at the 5% level is −2.88 for both tests. The symbol * indicates that the null hypothesis can be rejected at the 5% level.

Table 3
Cointegration tests between economic growth and tourism expansion

Null hypothesis ($r =$ number of cointegrating equations)	Trace statistic		Maximum eigenvalue statistic	
	$r = 0$	$r \leqslant 1$	$r = 0$	$r = 1$
Quarterly LGDP and LTOUR [5]	25.48 ** (15.41/20.04)	4.16 * (3.76/6.65)	21.32 ** (14.07/18.63)	4.16* (3.76/6.65)
Annual LGDP and LTOUR [3]	28.86 ** (15.41/20.04)	6.08* (3.76/6.65)	22.79 ** (14.07/18.63)	6.08* (3.76/6.65)

Note: The optimal lags selected based on AIC and SBC are in brackets. Osterwald-Lenum (1992) critical values for rejection of the null hypothesis at the 5% and 1% level are in parentheses. The symbol * and ** indicate that the null can be rejected at the 5% and 1% level, respectively.

likelihood ratio tests, a trace test and a maximum eigenvalue test to test for the number of cointegrating relationships. Table 3 shows results of the cointegration test between economic growth and tourism expansion based on different data frequency.[7] When the trace statistic (t) and the maximum eigenvalue statistic ($\lambda_{r|r+1}$) are greater than Osterwald-lenum (1992) critical values, the null hypothesis of r cointegrating vectors against the alternative of $r+1$ vectors is rejected. For quarterly data, two hypotheses ($r = 0$ and 1) were rejected at the 5% significance level, and one hypothesis ($r = 0$) was rejected at the 1% level. This indicated the existence of at least two cointegrating equations between quarterly LGDP and LTOUR at the 5% level and one equation at the 1% level. For annual data, the same results were produced. Two cointegrating equations were found at the 5% level and one equation at the 1% level. In conclusion, the Johannen cointegration test supported the first hypothesis of this study. It is concluded that there is a long-run equilibrium relationship between economic growth and tourism expansion in Taiwan.

[7]As in Balaguer and Cantavella-Jorda (2002), we also added the exchange rate variable into the cointegration tests. Test results still evidenced a long-run link between economic growth and tourism expansion. Both trace statistic (t) and the maximum eigenvalue statistic ($\lambda_{r|r+1}$) indicated at least one cointegrating equation at the 5% level among economic growth, tourism expansion and exchange rate regardless of quarterly or annual data series.

3.2.2. Granger causality tests

Engle and Granger (1987) and Granger (1988) noted that if two time-series variables are cointegrated, then at least one -directional Granger-causation exists. The existence of a stable long-run relationship (cointegrating relationship) between economic growth and tourism expansion implies that the two variables are causally related at least in one direction. As a final step, to answer the question regarding the direction of causation, the Granger causality tests were performed.

Since two series of economic growth and tourism expansion are cointegrated of order (1,1), a VAR model can be constructed in terms of the levels of the data (Engle & Granger, 1987). The causality tests between economic growth and tourism expansion involve estimating the following bivariate regressions:

$$Growth_t = \mu_1 + \sum_{i=1}^{l} \alpha_{1i} Growth_{t-i} + \sum_{i=1}^{l} \beta_{1i} Tourism_{t-i} + e_{1t}, \quad (1)$$

$$Tourism_t = \mu_2 + \sum_{i=1}^{l} \alpha_{2i} Tourism_{t-i} + \sum_{i=1}^{l} \beta_{2i} Growth_{t-i} + e_{2t}, \quad (2)$$

where μ is the deterministic component, e_t is white noise and *Tourism* and *Growth* represents the tourism expansion (LTOUR) and economic growth (LGDP),

Table 4
Granger causality tests with quarterly data (1971:I–2003:II)

	Null: LGDP does not Granger cause LTOUR		Null: LTOUR does not Granger cause LGDP	
Optimal lag	6		6	
F-statistic (*p*-value)	4.23 (0.00)		4.66 (0.00)	
Sum of lagged coefficients	0.02		0.02	
Lag structure	*F*-statistic	*p*-value	*F*-statistic	*p*-value
4	5.71	0.00	2.73	0.03
5	6.20	0.00	9.58	0.00
7	3.92	0.00	6.23	0.00
8	2.60	0.01	6.44	0.00

Table 5
Granger causality tests with annual data (1956–2002)

	Null: LGDP does not Granger cause LTOUR		Null: LTOUR does not Granger cause LGDP	
Optimal lag	3		3	
F-statistic (*p*-value)	3.65 (0.02)		8.29 (0.00)	
Sum of lagged coefficients	0.06		0.10	
Lag structure	*F*-statistic	*p*-value	*F*-statistic	*p*-value
1	4.66	0.04	18.54	0.00
2	1.09	0.35	9.26	0.00
4	2.22	0.09	2.11	0.10
5	0.80	0.56	2.89	0.03

respectively. In a cointegrated system, the null hypothesis that *Tourism* does NOT Granger-cause *Growth* cannot be rejected if

$$\beta_{11} = \beta_{12} = \cdots = \beta_{1l} = 0. \quad (3)$$

Similarly, the null hypothesis that *Growth* does NOT Granger-cause *Tourism* cannot be rejected if

$$\beta_{21} = \beta_{22} = \cdots = \beta_{2l} = 0. \quad (4)$$

Both hypotheses were tested by a standard *F*-test. The optimal lag l was selected with the smallest values of Akaike Information Criteria (AIC) and Schwartz Bayesian Criteria (SBC). Both criteria indicated lag 6 and lag 3 as the optimal lag for the quarterly and annual data, respectively. Then, the diagnostic checks with various lags were performed to ensure that results of the causality test are not sensitive to the different lags (Pindyck & Rubinfeld, 1991; Shan & Sun, 1998).

Tables 4 and 5 display results of the Granger causality test with quarterly and annual data, respectively. For quarterly data, the null hypothesis regarding no causation of economic development (LGDP) to tourism expansion (LTOUR) is rejected at the 1% significance level; the null concerning no causation of tourism expansion (LTOUR) to economic growth (LGDP) is also rejected at the 1% significance level. Therefore, the second hypothesis (the tourism-led economic growth) and the third hypothesis (the economic-led tourism expansion) of this study are both supported.

The coexistence of the tourism-led economic growth and the economic-led tourism expansion indicates a reciprocal relationship between the two variables thereby supporting the last hypothesis of this study. Considering that the test results are robust to the different lags (see Table 4), conclusions drawn from the Granger causality tests are sound and reliable. Since the coefficient in the log function implies a percentage change in the dependent variable given a percentage change in the independent variable, the results can be further interpreted as follows: a 5% increase in tourism arrivals leads to a 0.1% increase in GDP and a 5% increase in GDP also causes a 0.1% increase in tourism arrivals.

For yearly data, empirical results are almost identical with exception to the causality test running from economic growth (LGDP) to tourism expansion (LTOUR). Note that the null hypothesis that LGDP does not Granger-cause LTOUR is rejected at a lower significance level (5% level) and appears to be more sensitive to the different lags (see Table 5). Based on the rejection of both null hypotheses, a bi-directional causality between tourism and economic development is again supported using yearly data. The test results further indicate that a 5% increase in tourism arrivals

leads to a 0.5% increase in GDP and a 5% increase in GDP causes a 0.3% increase in tourism arrivals.

4. Discussion and managerial implications

We initially expected empirical results of this study to be similar to Oh's (2005) because Taiwan and South Korea have experienced a similar type of economic development and tourism has not been a primary industry. Oh (2005) found economic-driven tourism expansion in the country of South Korea. Unlike South Korea, this study found a reciprocal relationship indicating that in Taiwan, tourism and economic development reinforce each other.

Some of the possible reasons why the tourism-led economic growth hypothesis is true for Taiwan but not for South Korea is as follows: First, we speculate the level of openness of the country, including travel, as a contributing factor. For example, the South Korean government placed strict rules for imports and international travels. High tariffs were imposed on imported goods to protect Korean products. Most foreign firms were not allowed in the Korean market until South Korea became wide open in the mid 1990s after joining the WTO (World Trade Organization). Ordinary people could not make international trips freely until the late 1980s (Bailey, 2000).

Compared to South Korea, Taiwan began implementing tariff reductions to further open the market for international trade beginning in the early 1970s (Liu, 2002). No strict travel regulations have ever existed in Taiwan. The reason for this may be explained by one distinctive difference in the economic system between the two nations. Small and medium-sized companies play a key role in Taiwan whereas large conglomerates lead South Korea (Feenstra, Yang, & Hamilton, 1999). In South Korea, it is perhaps sufficient for a few selected people such as key managers in the trading division of large corporations to have a privilege to travel abroad. However, in Taiwan, many small independent entrepreneurs may have to make international business trips. If strict travel rules are given to these ordinary people who own such companies, their businesses will be hampered and further national economic growth will be influenced negatively. The countries with more open societies such as Taiwan are, therefore, more likely to stimulate both inbound and outbound travels, which in turn boost economic growth.

Second, world demand for tourism would have a favorable effect on the long-run growth of a small economy (Hazari & Sgro, 1995). Taiwan has GDP per capita of 18,000 US$ and South Korea has GDP per head of over 19,000 US$ (The CIA World Factbook, 2003). Although both countries have a similar level of GDP per capita, Taiwan is a small tropical island with a population of 22 million (The Taiwan Economic Journal Data Bank, 2004) whereas South Korea has a population of more than 48 million (Korea National Statistical Office, 2004). Given that Taiwan has a relatively smaller economy than South Korea, it seems reasonable to observe tourism-led economic growth in Taiwan.

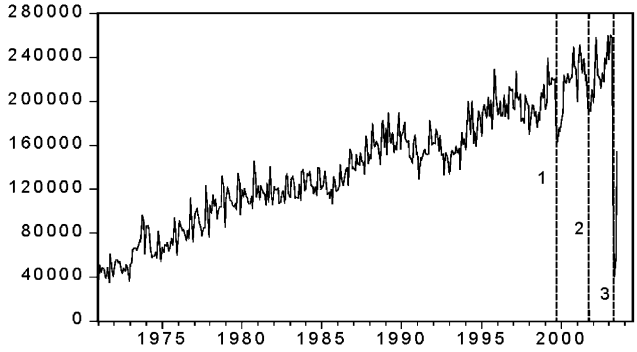

Fig. 3. The time trend of the monthly tourist arrivals Dotted line 1 = The 921 Earthquake (9/1999); Dotted line 2 = The 911 Terrorist Attacks (9/2001); Dotted line 3 = The SARS Outbreak (4/2003).

The tourism industry in Taiwan has been seriously damaged by the 9/11 terrorist attacks in the US and a series of natural disasters (see Fig. 3). In particular, the effect of the outbreak of SARS (severe acute respiratory syndrome) on April 22, 2003 was so great that the number of visitors to Taiwan decreased from 258,023 in March to 110,632 in April (a 57% drop in 1 month) and 40,250 in May (a 84% drop in 2 months) and GDP decreased by more than 8% during this period. Empirical results of this study may provide guidance for private and government tourism policy makers and authorities in Taiwan. Because a long-run equilibrium relationship and a bi-directional causality exist between tourism and economic growth, to enliven the tourism sector, it is recommended to simultaneously pay attention to not only the tourism segment but also other major industries. It also appears that the decision of the Taiwanese government to develop a long-term tourism strategic plan, the Doubling Tourist Arrivals Plan (DTAP), appropriate means to "rebound" the economy.

In sum, the results of the causality test can help the government set priorities regarding where and how to use limited resources for national economic growth. If empirical results support a tourism-led economic growth, more resources should be allocated to tourism and travel industries prior to other segments. If an economic-driven tourism growth holds true, the government should allocate resources to leading industries so that the overall economy will be improved. In this situation, tourism expansion is a byproduct. However, if a reciprocal relationship exists, resources should be equally allotted to tourism and other major industries, which is appropriate in the case of Taiwan.

5. Conclusion

There is a vast amount of research on the economic impact of tourism activity in the tourism literature. Major economic benefits derived from tourism activity include foreign exchange earnings, employments, and income (Archer, 1995; Belisle & Hoy, 1980; Davis et al., 1988; Durbarry, 2002; Khan et al., 1990; Mill & Morrison, 2002; Uysal & Gitelson, 1994; West, 1993). The results of previous studies seem to be based on the assumption that tourism activity will affect the local or national economy positively. Despite the belief in tourism-led economic development, not many studies have empirically investigated a causal relationship between tourism and economic growth. Oh (2005) argued that it is necessary to investigate the hypothesis in numerous destination countries for the purpose of generalization. This study was conducted to contribute to the body of literature in respect to Taiwan.

To detect the causal relationship, we performed a Granger causality test following the cointegration approach, which has been the typical method favored in studies of this kind. The current study discovered a reciprocal relationship between tourism expansion and economic development with Taiwanese data. Note that empirical results on the causal relationship between the two variables have been inconsistent in the past. The Spanish data showed that tourism growth caused economic development in one direction (Balaguer & Cantavella-Jorda, 2002); Greece had a bi-directional causality between international tourism earnings and economic development (Dritsakis, 2004); and the South Korean data revealed a one-way relationship from economic growth to tourism expansion (Oh, 2005).

The mixed results indicate that the direction of causality between economic growth and tourism may be determined by various factors. We speculated the size of the national economy and the level of openness of the country as well as the level of travel restrictions as feasible factors brought about differences between Taiwan and South Korea. In addition to these factors, the degree of dependence on tourism, tourism destination life cycle, and the level of economic development may be considered as some other determinants. In future studies, tourism researchers may want to compare multiple countries using the above variables as intervening factors between economic development and tourism activity and draw a concrete conclusion as to tourism-led economic growth theory.

A careful empirical analysis, such as the one shown in this study, is desirable for any country that may want to focus on the tourism industry as part of its national economic development policy. The analysis will verify if the common notion on the tourism-led economic growth is applicable to that particular country. Based on the results, decisions on the tourism related matters can be adjusted or altered such as the overall tourism budget, approval of private or governmental tourism projects, the scale of the worldwide promotion as a travel destination, and so forth.

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